Table 2.– Summary of Postoperative Results for the Surgical Treatment of Primary Valvular Incompetence by Valvuloplasty

		Postoperative Results			
Series	Follow-up(mos)		Imaging	Hemodynam	Clinical Results
Kistner	48-252 (108)	86%	67% (PVI)	60%	35% ulcer
Raju	24-96			85% 1 year 75% 2 years 63% 3 years	7% DVT 5% bleed 5% infec
Perrin	24-96 (58 months)	85%	68%		19.2% ulcer recurrence 77.8% ulcer free survival
Eriksson	6-84		100%	64% 6 mos 62% 84 mos	30% ulcer
Sottiurai	10-73			80%	?
Simkin	??			50%	
O'Donnell	12-62			100%	85% remain healed

Range of follow, as well as (mean follow-up). Imaging refers to the percent of patients who were free of reflux on phlebography or duplex.
Hemodynamics refers to the percent of patients who had normalization of their APG or VRT#.
*Angioscopically guided valvuloplasty

INTERNAL VALVULOPLASTY

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In case of primary deep venous reflux and when deep venous reconstructive surgery is planned internal valvuloplasty looks to be in our experience the recommended surgical procedure.

The rationale for recommending Internal Valvuloplasty (IV): First of all because other techniques have not yet provided long term results as good as IV.

-Valve transfer (transposition, transplantation) has been mostly used to treat secondary deep vein reflux and generally their results are not as satisfactory as those obtained by IV (Perrin, Raju, Sottiurai).

-Psathakis operation II had given excellent results to his promoter but disappointing in small series reported by others (Perrin, Scurr).

-Several authors (Belcaro, Lane, Raju, and Schanzer) had performed external wrapping (Veno-cuff, banding with Gore-Tex or Dacron sleeve). Results are difficult to assess as various materials and techniques had been used, indications were different according to authors and long-term results are not available. Furthermore, I cannot clearly understand how shrinking of the vein diameter may work to correct reflux when the free borders of the valve are elongated and already in contact.

-Plagnol and Raju had used neovalve. The former had reported only mid-term results (average 18 month) in 44 extremities including 32-graded C6. Ulcer had recurred in 3/32(9.4%) and hemodynamic failure in 6 /44(13.6%).

-Hoshino, Kistner, Gloviczki, O'Donnell and Raju had used external valve repair, but again we have only short- or mid-term results. The advantages of the external valvuloplasty (EV) compared to IV are: EV is quicker than IV, allowing multivalve repair and avoids phlebotomy. In our unit we have only performed EV in addition to IV at the popliteal level without using angioscopy. Angioscopy is certainly very helpful as recommended by Gloviczki, Hoshino, and O'Donnell. I would add that in EV, the vein needs to be peeled off, and that might be detrimental to the vein wall vascularization.

-Internal Valvuloplasty: Kistner, Raju, and Sottiurai have described three techniques. We used the latter with minor modifications because it seems easier to perform valve repair through the T-shaped phlebotomy.

The ideal site for performing valvuloplasty is still under discussion: Sottiurai recommends popliteal level and Raju termination of the superficial femoral vein. In our series the latter has been chosen.

One of the potential hazards in IV is postoperative thrombosis. All our patients have had a postoperative ascending phlebography (24 to 36 hr. after surgery) to assess this complication. In IV (#65) for primary vein reflux we have recorded 5 (7.6%) limited thrombosis in situ or distal to the valve repair. Our results are summarized in Tables I, II, III, and IV. Table V displays results gathered through the published literature. Until updated data on others' techniques with long follow-up results assessment will be presented, IV seems the more reliable surgical technique to correct deep venous reflux.

Table 1

MATERIAL AND METHODS

1988 - 1997 — 85 extremities treated by Valvuloplasty

65 for PVI — Group I
19 for PVI (?) + PTS (distal) — Group II
1 for KT

Table 2

MATERIAL AND METHODS

1988 – 1997 — 85 lower limbs treated by valvuloplasty

35 for C5 - C6 (41.2 %)
Follow-up : 12 - 96 m
(average 64)

Table 3

VALVULOPLASTY for ULCER (C5 - C6)

Clinical Results

(Nb of extremities)	Ulcer Recurrence (%)	Non Healed (%)
Group I (24)	3/24 (12)	1/24 (4.1)
Group II (10)	5/10 (50)	1/10 (10)

P=0.03 (exact Fisher Test)

Table 4

VALVULOPLASTY for ULCER (C5 - C6)

Hemodynamic Results

(Nb of extremities)	No or minor Reflux	Major reflux (%)
Group I (24)	18	6 (25)
Group II (10)	4	6 (60)

P=0.05 (exact Fisher Test)

Table 5.– Internal Valvuloplasty Results

	No Limbs (# Valve Repaired)	Etiol. PVI	Follow-Up in months (average)	Clinical Results Ulcer Recurrence (%)	Hemodynamic Competent Valve (%)	Results ■ AVP, ▲ RT
KISTNER	32	/	60-252 (127)	(50)	24/31 (77)*	■ ↗ 81 % (m) ▲ ↗ 56 % (m)
RAJU	68 (71)	/	12-144	16/68 (26)	30/71	/
SOTTIURAI	118	/	8-146 (71)	9/42 (21)	89/118 (75)	/
ERIKSSON	27	27/27	(49)		19/27 (70)	■ ↗ 81 % (m) ▲ ↗ 50 % (m)
PERRIN	85 (94)	65/85	12-96 (58)	10/35(28.6)†	51/83 (62) 64/83 (77)*	■ Normalized 63.2 %

ABBREVIATIONS

I = Internal Valvuloplasty
E = External Valvuloplasty
W =Wrapping
↗=Improved
(m) =Mean

AVP = Ambulatory Venous Pressure
RT = Refilling Time with Tourniquet
* No or mild reflux
† Ulcer recurrence or non-healed ulcer